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IN THE CLAIMS:

1 - 43. (Cancelled)

44. (Currently amended) An organic optoelectronic device structure comprising:

a substrate;

an organic optoelectronic device disposed over said substrate, said organic optoelectronic device selected from an organic light emitting diode, an organic electrochromic display, an organic photovoltaic device and an organic thin film transistor; and

a barrier region disposed over said organic optoelectronic device, said barrier region comprising a plurality of cooperative barrier layers, said plurality of cooperative barrier layers further comprising a planarizing layer and a high-density layer, wherein said high-density layer is disposed over said planarizing layer in a manner such that said high-density layer extends to said substrate ~~layer~~ and, in conjunction with said substrate ~~layer~~, completely surrounds said planarizing layer.

45. (Previously presented) The OLED structure of claim 44, wherein said plurality of cooperative barrier layers comprises two or more planarizing layers and two or more high-density layers, and wherein each overlying cooperative barrier layer that is disposed over one or more underlying cooperative barrier layers extends to the substrate in a manner such that said one or more underlying cooperative barrier layers are surrounded by said substrate and said each overlying cooperative barrier layer.

46. (Previously presented) The organic optoelectronic device structure of claim 44, wherein said cooperative barrier layers comprise an alternating series of two or more planarizing layers and two or more high-density layers.

47. (Previously presented) The organic optoelectronic device structure of claim 46, wherein said alternating series comprises 3 to 7 planarizing layers and 3 to 7 high-density layers.

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48. (Previously presented) The organic optoelectronic device structure of claim 44, wherein said planarizing layer comprises a material selected from fluorinated polymers, parylenes, cyclotenes and polyacrylates.

49. (Previously presented) The organic optoelectronic device structure of claim 44, wherein said high-density layer comprises a material selected from metal oxides, metal nitrides, metal carbides, metals and metal oxynitrides.

50. (Previously presented) The organic optoelectronic device structure of claim 44, wherein said high-density layer comprises a material selected from silicon oxide, silicon nitride, aluminum oxide, indium tin oxide and zinc indium tin oxide.

51. (Previously presented) The organic optoelectronic device structure of claim 44, wherein said organic optoelectronic device is an OLED device.

52. (Previously presented) The organic optoelectronic device structure of claim 44, wherein said substrate is a rigid substrate.

53. (Previously presented) The organic optoelectronic device structure of claim 44, wherein said substrate is a flexible substrate.

54. (Previously presented) The organic optoelectronic device structure of claim 44, wherein said substrate comprises a metal foil.

55. (Previously presented) The organic optoelectronic device structure of claim 44, wherein said substrate comprises a rigid glass layer.

56. (Previously presented) The organic optoelectronic device structure of claim 44, wherein said organic optoelectronic device is an organic electrochromic display.

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57. (Previously presented) The organic optoelectronic device structure of claim 44, wherein said organic optoelectronic device is an organic photovoltaic device.

58. (Previously presented) The organic optoelectronic device structure of claim 44, wherein said organic optoelectronic device is an organic thin film transistor.

59. (New) The organic optoelectronic device structure of claim 44, wherein said substrate comprises a polymeric substrate layer and a barrier region disposed over said polymeric substrate layer, said barrier region comprising a plurality of cooperative barrier layers which comprise a planarizing layer and a high-density layer.